Claims

1. A fuel injection system for internal combustion engines, having a fuel injector (3) that can be supplied from a high-pressure fuel source (21), in which a pressure boosting system (2) that has a movable booster piston (5) is switched between the fuel injector (3) and the high-pressure fuel source (21), and the booster piston (5) divides a chamber (9), connected to the high-pressure fuel source (21), from a high-pressure chamber (11) communicating with the fuel injector (3) and from a differential pressure chamber (10), and the actuation of the pressure boosting system (2) is effected via a 2/2-way valve assigned to the differential pressure chamber (10), characterized in that refilling of the differential pressure chamber (10) and of the high-pressure chamber (11) of the pressure boosting system (2) is effected via hydraulically actuated check valves (26, 31), which upon pressure relief of the differential pressure chamber (10) are acted upon by the pressure level prevailing in the high-pressure chamber (11).

2. The fuel injection system of claim 1, characterized in that the check valve serving to fill the differential pressure chamber (10) is acted upon, as a compensation valve (26), by a spring element (27) acting in the opening direction of the compensation valve (26).

3. The fuel injection system of claim 1, characterized in that the check valve serving to provide filling is acted upon, as a filling valve (31), by a spring element (34) acting in the closing direction of the filling valve (31).

4. The fuel injection system of claim 1, characterized in that the check valves (26, 31) are integrated with the booster piston (5) of the pressure boosting system (2).

5. The fuel injection system of claim 4, characterized in that valve bodies (33) of the check valves (26, 31) each include one end face (28, 35), which faces can be acted upon hydraulically directly via the high-pressure chamber (11).

6. The fuel injection system of claim 2, characterized in that the check valve acting as a compensation valve (26) is received in a connecting line (30) between the differential pressure chamber (10) and the work chamber (9) of the pressure boosting system (2).

7. The fuel injection system of claim 3, characterized in that the check valve acting as a filling valve (31) is received in a flow connection (25, 30) between the high-pressure chamber (11) and the work chamber (9) of the pressure boosting system (2).

8. The fuel injection system of claim 1, characterized in that a control chamber (13) of the fuel injector (3) and the differential pressure chamber (10) of the pressure boosting system (2) communicate hydraulically via an overflow line (24).

9. The fuel injection system of claim 1, characterized in that the check valves (26, 31) each have seats (29, 32), oriented toward the work chamber (9) of the pressure boosting system (2), which when pressure is exerted on the high-pressure chamber (11) are closed by the valve bodies (33) of the check valves (26, 31).

10. The fuel injection system of claim 8, characterized in that the control chamber (13) has a closing spring element (17), which urges the injection valve member (14) in the closing direction.

11. The fuel injection system of claim 8, characterized in that a hydraulically effective surface area of the face end, pointing toward the control chamber (13), of the injection valve member (14) exceeds a differential surface area (19) on the circumference of the injection valve member (14).